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Effect of Gonadotropin-Releasing Hormone Agonists on Auxological Outcomes of Korean Boys with Central Precocious puberty and Early Puberty

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INTRODUCTION

- Many studies have reported that the GnRHa treatment of patients with CPP increased final adult height (FAH) by from 4 to 8 cm compared with untreated patients.
- There have been very few studies on the long-term outcome of GnRHa treatment in boys with CPP because the incidence of CPP in boys is approximately 10-fold lower than in girls.
- Therefore, the aim of the present study was to determine effects of GnRHa treatment on auxological outcome of Korean boys with CPP.

METHODS

•Twenty-four boys with CPP were enrolled who were treated with leuprolide acetate or triptorelin for at least 2 years.

- Anthropometry, bone age, sexual maturity rating, and predicted adult height (PAH) were assessed every 6 months until discontinuation of treatment.

•Furthermore, 13 boys were followed up after discontinuation of treatment and until they reached adult height.

RESULTS

- Mean chronological age (CA) and bone age (BA) of patients in CPP at the start of treatment were 9.6 ± 0.56 years and 12.1 ± 0.89 years, respectively.

•The mean duration of treatment was 2.79 ± 0.55 years.

•There were significant increases in PAH SDS after GnRHa treatment in boys with CPP (Table 1).

Table 1. Clinical and auxological characteristics of 24 boys with central precocious puberty at baseline and the end of GnRHa treatment

Variable	At the start of treatment	At 1 year of treatment	At the end of treatment	P value
Age (year)	9.6 ± 0.5	10.7 ± 0.6	12.3 ± 0.7	<0.001
Height (cm)	143.6 ± 5.9	151.0 ± 5.9	159.1 ± 6.4	<0.001
Height SDS	1.28 ± 1.05	1.31 ± 1.05	0.80 ± 1.01	<0.001
Weight SDS	1.16 ± 0.91	1.13 ± 0.92	0.98 ± 0.98	0.013
BMI SDS	0.84 ± 0.97	0.77 ± 1.02	0.80 ± 1.04	0.696
Bone age(year)	12.0 ± 0.8	12.8 ± 0.7	13.7 ± 0.4	<0.001
BA-CA	2.4 ± 0.9	2.0 ± 0.8	1.3 ± 0.7	<0.001
TH SDS	-0.52 ± 0.78			
PAH SDS	-0.42 ± 0.78	0.01 ± 0.85	0.10 ± 0.95	0.001
Testicular volume (cc)	5.4 ± 1.5	4.5 ± 1.2	4.2 ± 1.1	<0.001

•Among the 24 subjects, final auxological data was collected from 13 boys with CPP. The final evaluation was performed at a mean age of 15.7 ± 1.5 years after a mean treatment duration of 2.76 ± 0.55 years.

•Comparisons between TH SDS and PAH SDS at the initiation of treatment, PAH at the end of treatment, and FAH are shown in Figure 1.

•The mean final height was 173.8 ± 6.7 cm (SDS 0.07 ± 1.19) and the final height increased significantly compared to PAH at initiation of treatment and target height.

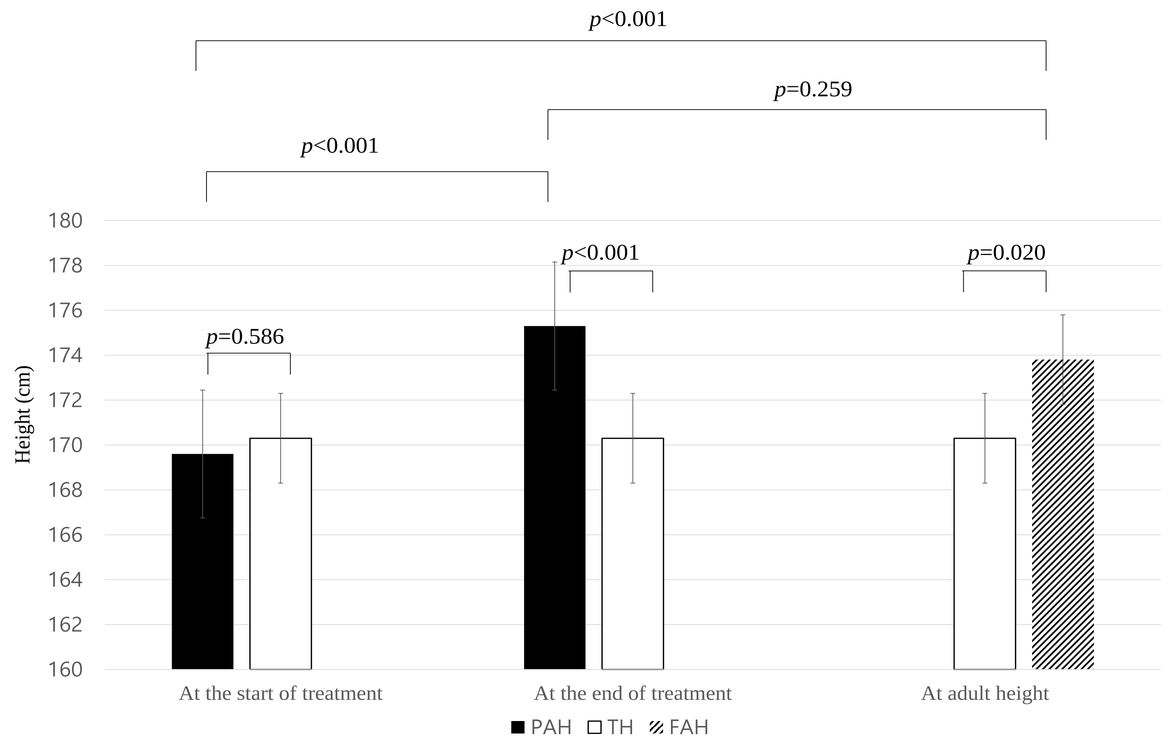

Figure 1. Changes in predicted adult height during treatment period and final adult height after GnRHa treatment in 13 boys with central precocious puberty (CPP) *PAH, Predicted adult height; TH, target height; FAH, final adult height

• Multivariate analysis revealed that the FAH SDS was influenced significantly only by height SDS at the start of treatment in these 13 boys with CPP (Table 2).

Table 2. Factors associated with final adult height (SDS) in girls treated with GnRHa for precocious puberty (n=13, r2=0.524, P=0.003)

Predictive factor	ß	Standard error	P value
Initial height SDS	0.878	0.233	0.003

CONCLUSION

- GnRHa treatment can significantly improve the growth potential of boys with CPP.
- The FAH SDS positively correlated with height SDS at the start of treatment.

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